

To: Sheila Fleming/R10/USEPA/US@EPA[]
Cc: cleanriveroregon4@yahoo.com;jim@jimrobison.org; **Personal Privacy / Ex. 6**;
im@jimrobison.org; **Personal Privacy / Ex. 6**
From: Alanna Conley/R10/USEPA/US@EPA
Sent: Wed 11/14/2012 1:05:35 AM
Subject: [epa-nworegon] CANCELLED: Nov 14: Portland Harbor CAG meeting presentation has been cancelled

Per the Portland Harbor CAG, tomorrow's meeting and presentation has been cancelled.
Please contact Jim Robison (CAG President) directly if you should have questions.

Personal Privacy / Ex. 6

Alanna Conley---11/13/2012 10:43:33 AM---FYI: November 14 Portland Harbor CAG meeting - Please contact Jackie Calder directly The message be

From: Alanna Conley/R10/USEPA/US
To: epa-nworegon@lists.epa.gov
Cc: jim@jimrobison.org, cleanriveroregon4@yahoo.com, jimrobisonpdx@gmail.com
Date: 11/13/2012 10:43 AM
Subject: Nov 14: Portland Harbor CAG meeting presentation by Jackie Calder, 6pm, NAYA Building- 5135 NE Columbia Blvd.

FYI: November 14 Portland Harbor CAG meeting - Please contact Jackie Calder directly
The message below is concerning tomorrow's CAG meeting (training session). The message being forwarded is from Jackie Calder, Outreach Chair for Portland Harbor Advisory Group. Please contact Jackie, cleanriveroregon4@yahoo.com, or Jim Robison (CAG President), **Personal Privacy / Ex. 6** directly if you should have questions concerning tomorrow's session.

MESSAGE FORWARD:

Hi Everyone,
The format for this PHCAG meeting will be different. It is the first of educational meetings that the PHCAG will hold. It will be a PowerPoint presentation that is an overview of the Portland Harbor Superfund process and will touch on subjects such as: the Remedial Investigation, Feasibility Study, NRDA-the Trustees, local non-transient fish and what folks can do to help or contribute.

November 14, 2012, 6-8pm, NAYA Building, 5135 NE Columbia Blvd.

Topic: CAG Education presentation, Jackie Calder. (No meeting at BES Water Lab)

Jackie Calder
Outreach Chair
Portland Harbor Community Advisory Group

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To: Jeremy_Buck@fws.gov;bob@ridolfi.com;CN=Joe Goulet/OU=R10/O=USEPA/C=US@EPA;CN=Sheila Fleming/OU=R10/O=USEPA/C=US@EPA;mesl@shaw.ca;jpeers@stratusconsulting.com;PETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; ob@ridolfi.com;CN=Joe Goulet/OU=R10/O=USEPA/C=US@EPA;CN=Sheila Fleming/OU=R10/O=USEPA/C=US@EPA;mesl@shaw.ca;jpeers@stratusconsulting.com;PETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; N=Joe Goulet/OU=R10/O=USEPA/C=US@EPA;CN=Sheila Fleming/OU=R10/O=USEPA/C=US@EPA;mesl@shaw.ca;jpeers@stratusconsulting.com;PETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; N=Sheila Fleming/OU=R10/O=USEPA/C=US@EPA;mesl@shaw.ca;jpeers@stratusconsulting.com;PETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; esl@shaw.ca;jpeers@stratusconsulting.com;PETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; peers@stratusconsulting.com;PETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; ETERSON.Jenn@deq.state.or.us;"Keefe, Jennifer" [KeefeJM@cdmsmith.com]; Keefe, Jennifer" [KeefeJM@cdmsmith.com]; Ilison Ebbets [AEbbets@stratusconsulting.com]; ose Longoria [rose@yakamafish-nsn.gov]; Gendusa, Tony" [GendusaTC@cdmsmith.com]; King, Todd W." [KingTW@cdmsmith.com]; Penoyar, Susan" [PenoyarSJ@cdmsmith.com]

Cc: []

From: CN=Burt Shephard/OU=R10/O=USEPA/C=US

Sent: Thur 12/13/2012 1:32:06 AM

Subject: Portland Harbor BERA call tomorrow, December 13, 10-11am PST. Dial in number

Personal Privacy / Ex. 6
[EPA rewrite of BERA executive summary 121212.docx](#)

I'd like to try and have a short call tomorrow morning, if for no other reason than to get me out of a 24 hour health and safety refresher course for an hour. Purpose of the call is to discuss the attached, slightly updated version of the rewritten executive summary, with a completed Table ES-6 (list of all COCs in the BERA), and some relatively minor changes made by Kristine Koch and Lori Cora.

Best regards,

Burt Shephard
Risk Evaluation Unit
Office of Environmental Assessment (OEA-095)
U.S. Environmental Protection Agency, Region 10
1200 6th Avenue
Seattle, WA 98101

Telephone: (206) 553-6359

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e-mail: Shephard.Burt@epa.gov

"Facts are stubborn things"
- John Adams

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Susan" [PenoyarSJ@cdmsmith.com]
From: PETERSON Jenn L
Sent: Mon 12/17/2012 5:39:45 PM
Subject: RE: Portland Harbor BERA Edits DDM
[EPA rewrite of BERA executive summary 121712 \(JP Comments\).docx](#)
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Burt,

Here are my comments on the executive summary – good job by the way.

Jennifer

From: MESL [mailto:mesl@shaw.ca]
Sent: Thursday, December 13, 2012 3:19 PM
To: Shephard.Burt@epamail.epa.gov; Jeremy_Buck@fws.gov; bob@ridolfi.com;
Goulet.Joe@epamail.epa.gov; Fleming.Sheila@epamail.epa.gov; jpeers@stratusconsulting.com;
PETERSON Jenn L; Keefe, Jennifer; Allison Ebbets; Rose Longoria; Gendusa, Tony; King, Todd W.; Penoyar,
Susan
Subject: Portland Harbor BERA Edits DDM

Burt:

Attached please find our edited version of the Executive Summary for the Portland Harbor BERA. Note we have tables to follow.

Cheers,

Don

MacDonald Environmental Sciences Ltd.
Pacific Environmental Research Centre

#24-4800 Island Highway N
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Subject: Portland Harbor BERA call tomorrow, December 13, 10-11am PST. Dial in number [Personal Privacy / Ex. 6]
passcode [Personal Privacy / Ex. 6]

I'd like to try and have a short call tomorrow morning, if for no other reason than to get me out of a 24 hour health and safety refresher course for an hour. Purpose of the call is to discuss the attached, slightly updated version of the rewritten executive summary, with a completed Table ES-6 (list of all COCs in the BERA), and some relatively minor changes made by Kristine Koch and Lori Cora.

Best regards,

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"Facts are stubborn things"

- John Adams

(See attached file: EPA rewrite of BERA executive summary 121212.docx)

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Cc: []

Bcc: []
From: CN=Chip Humphrey/OU=R10/O=USEPA/C=US
Sent: Tue 4/17/2012 7:15:40 PM
Subject: TCT meeting 4/18/2012

The Portland Harbor TCT meeting is scheduled for tomorrow, Wednesday April 18th from 9 to 11:00am. The Portland location will be the DEQ Northwest Region, Conference Room C.

The conference line is [Personal Privacy / Ex. 6] passcode [Personal Privacy / Ex. 6]

Please let us know if you have anything to add to the list below, or feel free to bring up at the meeting
thanks
Chip

1) Early Action updates

2) RI/FS

- Community Outreach/Meetings 18 & May 10)
- Other outreach/meetings (ELEC May 4)
- FS Roll-out meeting is next week - April 24, 25 (draft agenda attached)
- Another white paper - FMC consultant evaluation of food web model (transmittal letter & comments attached below, full report is a large file and will be forwarded in separate email to those interested)

3) Uplands Site updates

FS Roll out meeting draft agenda

[attachment "2012-04-24 and 25 Draft EPA Presentation Agenda.pdf" deleted by Burt Shephard/R10/USEPA/US]

FMC Bioaccumulation model evaluation comment

[attachment "2012.04.13 IRM Report transmittal letter to EPA.pdf" deleted by Burt Shephard/R10/USEPA/US] [attachment "Bioaccumulation model comments (04-02-2012).pdf" deleted by Burt Shephard/R10/USEPA/US]

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Cc: []

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From: CN=Chip Humphrey/OU=R10/O=USEPA/C=US
Sent: Wed 5/30/2012 8:09:14 PM
Subject: Fw: Draft FS EPA Presentation Cross-Reference
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As mentioned in the Portland Harbor TCT meeting this morning, the LWG has provided their FS roll out meeting slide presentation with cross references to the draft FS document. A copy is attached below.

----- Forwarded by Chip Humphrey/R10/USEPA/US on 05/30/2012 01:05 PM -----

From: Jennifer Woronets <jworonets@anchoragea.com>
To: Chip Humphrey/R10/USEPA/US@EPA, Kristine Koch/R10/USEPA/US@EPA
Cc: Amanda Shellenberger <ashellenberger@anchoragea.com>, Jennifer Woronets <jworonets@anchoragea.com>, Carl Stivers <cstivers@anchoragea.com>, "Betz, Jan" <Jan.Betz@portlandoregon.gov>, Bob Wyatt <rjw@nwnatural.com>, Dave Livesay <dlivesay@gsiws.com>, David Ashton <david.ashton@portofportland.com>, "Fred G. Wolf (Frederick.wolf@total.com)" <Frederick.wolf@total.com> **Personal Privacy / Ex. 6**
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Date: 05/24/2012 01:06 PM
Subject: FW: Draft FS EPA Presentation Cross-Reference

Chip, Kristine,

Please see below and attached from Amanda.

Thank you,
Jen Woronets J
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Portland, OR 97204
503-972-5014

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From: Amanda Shellenberger
Sent: Thursday, May 24, 2012 8:44 AM
To: Jennifer Woronets
Subject: RE: LWG Amanda Question - Draft FS EPA Presentation Cross-Reference

EPA –

Per your request, attached is a copy of the April 18th LWG Draft FS Presentation to EPA. We have annotated the presentation in order to provide cross-reference information for each page of the presentation, referencing Sections, Figures, Tables, and/or Appendices of the Draft FS. Please let us know if you have any further questions.

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To: CN=Chip Humphrey/OU=R10/O=USEPA/C=US@EPA[]

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Bcc: []
From: CN=Burt Shephard/OU=R10/O=USEPA/C=US
Sent: Wed 9/5/2012 11:41:07 PM
Subject: Portland Harbor BERA team call Thursday, September 6, 10 am PDT to discuss
 government team risk management memo Personal Privacy / Ex. 6
[2011-07-22 Risk Management Recommendations.pdf](#)

Greetings all,

As we discussed earlier today on the Portland Harbor TCT call, we would like to schedule a 1 hour call tomorrow, Thursday September 6th at 10 am PDT to begin discussions on an ecological risk management recommendations memorandum from the government and trustees staffers working on the baseline ecological risk assessment to the EPA site managers. This risk management memorandum would ultimately be shared with the LWG. Risk management is Step 8 of EPA's 8-step ecological risk assessment guidance. The objective of the risk management memo is to integrate the conclusions of the BERA with other considerations so that risk managers for the site can make and justify their risk management decisions.

Unlike the BERA, which is intended to be strictly an informational document that identifies whether unacceptable risks are present, identifies the chemicals posing the risks, the receptors at risk and the locations and magnitude of risks, the risk management memo is also where we get to make recommendations on what, where and how much cleanup should take place to protect ecological

receptors.

From the risk assessment standpoint, the risk management memo is a good place to summarize the threshold chemical concentrations for adverse effects to various receptors. In other words, a good place to update ecological preliminary remediation goals (PRGs) defining the range of contaminant concentrations which, if not exceeded, are protective of the various receptors evaluated in the BERA. As an example, the various PRGs for total PCBs in sediment for various ecological receptors are as follows:

Background sediment - 17 (all concentrations below are in units of $\mu\text{g/kg}$ dry weight sediment)

Mink - 31

Smallmouth bass - 64

River otter - 68

Northern pikeminnow - 86

Largescale sucker - 152

Sculpin - 272

Probable effect level (benthic macroinvertebrates) - 277

Osprey - 423

Floating percentile model (benthic macroinvertebrates) - 500

Spotted sandpiper - 606

Hooded merganser - 618

Bald eagle - 730

Crayfish - 1370

Oligochaetes - 1470

Clams - 2420

Logistic regression model (benthic macroinvertebrates) - 2670

Quite the range of concentrations for Chip to pick from for protection of some or all ecological receptors.

Of course, risk managers have more to worry about than just ecological risks. EPA Superfund guidance describes nine criteria that must be taken into consideration during the risk management decision process. I suspect most of you are familiar with these, but here they are again.

- (1) Overall protection of human health and the environment
- (2) Compliance with applicable or relevant and appropriate requirements (ARARs)
- (3) Long-term effectiveness and permanence
- (4) Reduction of toxicity, mobility, or volume of hazardous wastes through the use of treatment
- (5) Short-term effectiveness
- (6) Implementability
- (7) Cost
- (8) State acceptance
- (9) Community acceptance

The overall goal of the remedy selection process is to eliminate, reduce, or control risks to human health and the environment. The BERA helps establish acceptable media concentrations for use in developing remedial alternatives in the feasibility study. Then, taken into consideration with other factors and the above nine criteria, Chip and Kristine select a preferred remedy. Within the application of the BERA results to the FS and remedy selection, there are two particular areas where ecological risks come into play. One is to recommend monitoring strategies to gauge the effectiveness of the selected remedy in protecting ecological receptors. The second is to identify areas where remedial actions themselves may cause unacceptable ecological risks. All in all, lots to consider in making ecological risk management recommendations to EPA site managers, so I don't think we'll lack for discussion topics.

I've asked Chip to give us some guidance tomorrow in two areas. One is a schedule for the risk management

memo, the second is in regard to the types of information they would like to see, as well as how it is presented to assist them in their remedial decision making and risk management evaluations.

Three areas I can personally think of that should be in our risk management memo is an updated table of PRGs for the primary ecological risk drivers, monitoring recommendations to document remedy effectiveness, and why we don't think the individual chemical benchmarks derived from the floating percentile model should be used as PRGs or cleanup numbers in the FS. I'm sure there are lots of other issues you can think of, tomorrow is your opportunity to start getting them out in the open and down on paper. I'm sure we'll need several calls and meetings to get all of our recommendations out in the open.

Call in number is the usual Portland Harbor TCT number: **Personal Privacy / Ex. 6**

For those who haven't seen it, or have forgotten what was in it, I've attached LWG's risk management recommendations document for both human health and ecological risks. A good place to start tomorrow could be to identify areas where the team agrees with LWG recommendations, so we don't have to reinvent the wheel.

Looking forward to talking with you tomorrow.

Best regards,

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"Facts are stubborn things"

- John Adams

**Task 1: Risk recommendations provided by LWG in their Risk Management
Recommendations document (July 22, 2011) – EPA TEAM CAN USE THESE
AS A BASIS (AGREE OR DISAGREE)**

Overall LWG Risk Recommendations

Based on the results of the BERA, the COCs, receptors, and benthic AOCs that should be used in assessing the protectiveness of potential remedies to ecological resources in the FS are:

1. For non-benthic receptors, PCBs and dioxins/furans are the recommended COCs for assessing risk to ecological receptors except benthic organisms (including fish). Mink is the recommended receptor of concern. Most of the contaminants posing potentially unacceptable risk were not recommended as COCs for the non-benthic receptors based on risk characterization considerations (magnitude, spatial extent, and ecological significance of HQs greater than or equal to 1). This list includes all the metals, butyltin, phthalate, pesticide, and volatile organic compound (VOC) COPCs.
2. For aquatic receptors exposed via TZW, 4,4'-DDT, total DDx, chlorobenzene, benzo(a)anthracene, benzo(a)pyrene, naphthalene, carbon disulfide, cyanide, cis-1,2-dichloroethene, and trichloroethene are the recommended COCs. These recommendations presume that groundwater source control measures will be implemented prior to sediment remedies. DEQ is working with upland property owners to implement groundwater source control measures prior to sediment remedies. For TZW exposures, remedies should be evaluated in the FS based on the degree to which they protect benthic invertebrate communities and Pacific lamprey ammocoetes from chemicals in groundwater discharge, assuming that groundwater source control measures have been implemented.
3. For benthic receptors, recommended benthic AOCs were identified by applying the comprehensive benthic approach based on EPA's April 21, 2010 guidelines for assessing benthic risk in the FS (EPA 2010). Eighteen discrete areas representing approximately seven percent of the Study Area were associated with deleterious effects on benthic organisms (Map 3-1 of risk recommendation document). The FS work should focus on the predicted toxicity metrics to evaluate potential remedies and should take into account sediment quality changes (due to deposition, chemical degradation, etc.) that will take place before active implementation of remedies. These AOCs, plus PCBs and dioxins/furans, will provide a sufficient basis for evaluating Portland Harbor remedial alternatives in the FS, subject to confirmation of protectiveness against other potentially unacceptable risks.

LWG Risk Recommendations for COC Selection

Rationale for Including COCs for developing risk recommendations for wildlife and fish

PCBs -- recommended as a COC because exposure poses a risk of ecologically significant adverse effects to mink and river otter populations. It also poses risk of ecologically significant adverse effects to spotted sandpiper, osprey, sculpin, and smallmouth bass populations and risk of adverse effects to bald eagles. The benthic tissue-residue LOE also supports the selection of PCBs as a COC. These additional risks are lower than the risk to mink and river otter populations.

Total TEQ is recommended as a COC because exposure poses a risk of ecologically significant adverse effects to mink populations. Total TEQ also poses risk of adverse effects to river otter, spotted sandpiper, and osprey populations and to bald eagles. These latter risks are lower than the risk to the mink population.

Rationale for Excluding COCs for developing risk recommendations for wildlife and fish

Inorganic metals (aluminum, antimony, arsenic, cadmium, copper, lead, zinc)

Aluminum

- unacceptable risk only for mink
- exceeds the dietary TRV only based on sediment ingestion, no prey samples exceed the effects threshold
- TRV is based on exposure of mice to a highly soluble ionic form of aluminum with higher bioavailability than typically found in the diet or drinking water
- Study Area sediment and surface water concentrations are similar to background

Antimony

- unacceptable risk based only on the tissue-residue LOE for smallmouth bass
- Low frequency of TRV exceedance (1 of 32 [3.1%] smallmouth bass samples)
- Weakness of the exposure estimate (the single composite sample is an outlier for both antimony and lead, suggesting that a fish in the sample might have swallowed a fishing sinker)
- Weakness of the effects estimate (TRV is based on a single study with a generic acute-to-chronic ratio [ACR] applied)
- Absence of relationship between concentrations in sediment and co-located tissue samples (Windward 2009)
- Discordance between the weaker tissue-residue LOE and the stronger surface water LOE (surface water TRV based on numerous exposure data and moderately sized Tier II effects dataset)

Arsenic

- unacceptable risk to benthic invertebrates based only on the tissue-residue LOE
- Low frequency of exceedance of the TRV (2 of 35 samples)
- Low magnitude of the exceedance (maximum HQ = 1.5)

Cadmium

- unacceptable risk based only on the dietary LOE for juvenile Chinook salmon and sculpin
- Low frequency of TRV exceedance in sculpin prey samples (9 of 111 [8.1%] prey samples, with maximum HQ = 2.2; and 1 of 1,348 [< 0.1%] sediment samples)

- Weakness of the Chinook exposure estimate (juvenile Chinook were conservatively presumed to feed predominantly on benthic organisms; this feeding strategy is contrary to the literature, which shows they feed predominantly on pelagic organisms)
- Uncertainty about the toxicological effects associated with the TRV (rockfish lowest-observed-adverse-effect level [LOAEL] setting the TRV is 2 to 3 orders of magnitude below the nine NOAELs from other studies, including four NOAELs and two LOAELs for salmonids)
- Low magnitude of juvenile Chinook salmon dietary HQ (3.5 assuming mixed prey diet) when taking into account the likelihood that both exposure and effects are overestimated (per the two previous items)
- Discordance of the dietary LOE with the surface water and tissue-residue LOEs (the cadmium ambient water quality criterion [AWQC] is based on a very large dataset so is the strongest LOE; the tissue-residue LOE is weak because fish sequester or otherwise bioregulate inorganic metals)

Copper

- unacceptable risk based on the fish tissue-residue, fish dietary, sandpiper dietary, and the benthic invertebrate tissue-residue LOEs
- Not selected for fish because:
 - Weakness of the tissue-residue LOE for inorganic metals (fish can actively bioregulate copper tissue concentrations; invertebrates sequester copper and in the case of crayfish, copper forms the basis of their hemoglobin)
 - Irreproducible toxicological effects associated with the dietary TRV (selected LOAEL could not be replicated in subsequent tests with the same species)
 - Selected LOAEL is barely above range of nutritional requirements found in the literature for some fish species
 - Discordance of the tissue and dietary LOEs with the stronger water LOE (which is based on numerous exposure data and a very large AWQC dataset showing that fish are not among the most sensitive species; absence of HQ ≥ 1 via the water LOE is the strongest evidence for drawing risk conclusions)
 - Similarity of fish tissue concentrations in the Study Area and upriver
- Not selected for shorebirds because:
 - Unlikely ecological significance of prey organism TRV exceedance (tissue-residue HQ ≥ 1 in only one prey item, laboratory-exposed worms; HQs < 1 for a mixed-species diet).
 - The selected TRV is less than the lowest bounded literature-reported NOAEL for birds.
 - Low magnitude of TRV exceedance (maximum HQ = 1.3) considering the likely overestimates of exposure and effects (per the two previous items)
- Not selected for benthic invertebrates because:
 - Low magnitude of TRV exceedance (maximum HQ = 2.6)
 - Weakness of the tissue-residue LOE for inorganic metals (invertebrates sequester copper and in the case of crayfish, copper forms the basis of their hemoglobin)

Lead

- poses unacceptable risk based on the tissue-residue LOE for peamouth and smallmouth bass, and on the dietary LOE for osprey and mink.
- Not selected for fish because:
 - Low frequency of tissue TRV exceedance (2 of 32 [6.2%] smallmouth bass and 1 of 4 [25%] peamouth samples)
 - Weakness of the exposure estimate (smallmouth bass concentration yielding high HQ [280] is an outlier for both antimony and lead in the same sample, suggesting that a fish in the composite sample might have swallowed a fishing sinker)
 - Discordance of tissue-residue LOE with dietary and water LOEs (based on a very large dataset, the lead AWQC is the strongest LOE; the tissue-residue LOE is weak because fish generally can sequester or otherwise bioregulate inorganic metals; the dietary LOE is more likely to overpredict than underpredict risk)
- Not recommended for birds or mammals because the only sample yielding an HQ ≥ 1 is the same outlier smallmouth bass sample as identified for antimony above

Zinc

- poses unacceptable risk for fish (sculpin, bass, pikeminnow), amphibians, and aquatic plants based only on the surface water LOE
- It poses a potentially unacceptable risk to benthic invertebrates based on the surface water and tissue-residue LOEs
- Low frequency of surface water TRV exceedance for all receptors (1 of 167 samples [$< 1\%$], with maximum HQ = 1.2)
- Discordance of the stronger surface water LOE with the weaker tissue-residue and dietary LOEs for fish (surface water toxicity data were sufficient to derive AWQC; tissue-residue LOE is weak because fish generally can sequester or otherwise bioregulate inorganic metals; the dietary LOE is relatively weak because the TRV is based on only two studies)
- The tissue-residue LOE for benthic invertebrates is a weak LOE

Organometals (mercury, monobutyltin, TBT)

Mercury

- poses unacceptable risk based on the dietary LOE for sculpin and bald eagle
- Not recommended for fish because:
 - dietary TRV was exceeded in only 1 of 1,345 sediment samples ($< 0.001\%$) and in no tissue samples.
- Not recommended for eagle because:
 - Discordance between the dietary and tissue-residue LOEs
 - Possible overestimate of bald eagle exposure when using osprey exposure as a surrogate because of greater proportion of terrestrial prey in the bald eagle diet
 - Low HQ (maximum HQ = 1.7) given the discordant LOEs and possibility that exposure is overestimated (per the previous two items)
 - Higher concentrations in upriver fish tissue than in Study Area fish tissue

Monobutyltin

- poses unacceptable risk based on the surface water LOE.
- Low frequency of surface water TRV exceedance (1 of 167 samples [$< 1\%$])

- Likely overestimate of toxicological effects associated with the TRV (which is based on the more toxic TBT)
- Low magnitude of exceedance (HQ = 1.2) considering the likely overestimate of effects and limited spatial extent of HQ ≥ 1 (per the previous two items)

TBT

- poses unacceptable risk based on the dietary LOE for sculpin and tissue-residue LOE for benthic invertebrates.
- Not recommended for fish because:
 - Single dietary TRV exceedance (based on 1 lab worm sample of 81 prey samples [1.2%] and only when combined with sediment ingestion)
 - Low magnitude of exceedance (maximum HQ = 1.0)
 - Uncertainty about toxicological effects associated with the TRV (reproduction success was reduced at the TRV, but not dose-responsive)
 - Discordance of dietary LOE with the tissue-residue and water LOEs (TBT tissue residue is noted to be reliable predictor of toxicity and is the strongest LOE (Meador et al. 2002))
- Not recommended for BMI because:
 - The TRV was exceeded in empirical bioaccumulation samples only at one location.
 - While predicted tissue residues exceeded the TRV more frequently, the moderate strength of the regression was highly influenced by the one high value in the dataset. The predicted tissue residues are uncertain and not supported by empirical data.
 - The TRV is uncertain due to the inclusion of imposex—the endpoint that defined the lower distribution of the species sensitivity distribution (SSD), which set the TRV

PAHs (Benzo(a)anthracene, benzo(a)pyrene, and naphthalene)

Each poses unacceptable risk to benthic invertebrates, fish, amphibians, and aquatic plants based on the surface water LOE.

Benzo(a)anthracene

- Low frequency of surface water TRV exceedance (2 of 245 samples [$< 1\%$], both between RM 6.4 and RM 6.5)
- Discordance of surface water LOE with dietary LOE for fish (benzo(a)anthracene did not screen in as a fish COPC by the dietary LOE)

Benzo(a)pyrene

- not recommended based on the surface water LOE because:
 - Low frequency of surface water TRV exceedance (3 of 122 [2.4%] near-bottom surface water samples, all from RM 6.4 to RM 6.5)¹⁹
 - Discordance of the surface water LOE with the dietary LOE for fish (benzo(a)pyrene did not screen in as a fish COPC by the dietary LOE)
- not recommended based on the bird dietary LOE because:
 - Benzo(a)pyrene poses potentially unacceptable risk to spotted sandpiper based on the dietary LOE
 - Low frequency of dietary TRV exceedance for spotted sandpiper (1 of 27 [3.7%] lab

- worm samples assuming lab worm-only diet; all HQs < 1 for clam-only diet)
- Low magnitude of exceedance (maximum HQ = 1.6) considering potential overestimate of exposure by presuming lab worm-only diet

Naphthalene

- Low frequency of surface water TRV exceedance (10 of 268 [3.7%] samples, all from west side of RM 6.4 to RM 6.5 during a single sampling event [the May 2005 non-LWG sampling event])²⁰
- Discordance of the surface water LOE with the dietary LOE for fish (naphthalene did not screen in as a fish COPC by the dietary LOE)

Phthalates (Bis(2-ethylhexyl) phthalate (BEHP) and Dibutyl phthalate)

Bis(2-ethylhexyl) phthalate (BEHP)

- poses unacceptable risk based on the benthic invertebrate and fish tissue-residue and surface water LOEs
- Low frequency of surface water TRV exceedance (2 of 190 samples [1.1%])
- Low frequency of fish tissue-residue TRV exceedance (1 of 38 sculpin samples [2.6%], 2 of 32 smallmouth bass samples [6.3%]) and low frequency of the benthic invertebrate tissue-residue TRV exceedance (1 of 35 clam samples or 3%)
- Low magnitude of exceedance for fish tissue TRV (maximum HQ = 2.9) and for benthic invertebrate TRV (maximum HQ = 2.8)
- Absence of toxicological effects associated with the tissue TRV (which is based on an unbounded NOAEL)
- Absence of relationship between concentrations in co-located sediment and tissue samples

Dibutyl phthalate

- poses potentially unacceptable risk based on the dietary LOE for spotted sandpiper
- Low frequency of dietary TRV exceedance (1 of 28 clam samples [3.6%], no worm samples)
- Low magnitude of dietary TRV exceedance (maximum HQ = 1.4 for clam-only diet; maximum HQ < 1 for worm-only diet)
- Absence of a relationship between concentrations in co-located sediment and tissue samples
- Higher sediment concentrations in background than in Study Area

Pesticides (Aldrin, Total DDx, 4,4'-DDD)

Aldrin

- poses unacceptable risk based on the dietary LOE for spotted sandpiper
- Low frequency of dietary TRV exceedance (1 of 27 lab worm samples [3.7%])
- Low magnitude of exceedance (maximum HQ = 1.4 based on the only lab worm sample that yields an HQ ≥ 1; HQ < 1 for clam-only and mixed diets)

Total DDx

- poses unacceptable risk based on the tissue-residue LOE for sculpin and benthic invertebrates; the dietary LOE for spotted sandpiper; the egg LOE for bald eagle; and the surface water LOE for the benthic community, sculpin, amphibians, and aquatic plants. The rationale for exclusion

from the list of recommended COCs varies with LOE

- Low frequency of TRV exceedance (1 of 170 samples [$< 1\%$]) in surface water based on N-qualified data, indicating interference from another analyte
- Low frequency of exceedance in empirical benthic tissue residue (2 of 35 worm samples or 6%)
- Low frequency of exceedance in predicted benthic tissue residues (up to 15 samples of 1,128 or 1.3%) and approximately half of which are based on N-qualified data
- Low frequency of TRV exceedance (2 of 27 lab worm samples [7.4%]) used in the dietary LOE for sandpiper
- Low magnitude of exceedance of TRV for sandpiper diet (maximum HQ = 1.4 assuming lab worm-only diet; HQ < 1 for all clam-only and mixed diets)
- Questionable relevance of estimated exposure for the bird egg LOE for bald eagle (there is significant uncertainty about the source of DDX residues in the osprey eggs collected from the Study Area because the adults overwinter in Mexico and Central America, nesting and laying eggs shortly after returning to the lower Willamette (Henny et al. 2004))
- Potential risk of adverse effects on bald eagles is present because NOAEL HQs are ≥ 1 in eggs from two of five exposure areas; because both were below the LOAEL, there is no empirical evidence of potential risk.
- All egg total DDX concentrations were below the recommended effects threshold reported in Elliott and Harris (2001\2002) based on a comprehensive review of the available bald eagle toxicological effects data
- Absence of relationship between concentrations in osprey egg samples and nearby sediment (NOAEL HQ ≥ 1 in eggs from two of five exposure areas, but NOAEL HQ < 1 in eggs from where sediment DDX concentrations were highest)
- Discordance of LOEs (mixed species dietary NOAEL HQs < 1 in all exposure areas)

4,4'-DDD

- poses unacceptable risk based on the tissue-residue LOE for benthic invertebrates
- Low frequency of TRV exceedance (1 of 35 samples or $< 3\%$)
- Low magnitude of the exceedance (HQ = 1.2)

VOCs (Ethylbenzene and Trichloroethene)

- In surface water exceeded their respective TRVs
- Low frequency of exceedance; TRV exceeded in 1 of 23(4%) samples collected from ~ RM 6.5 (west bank) during one sampling event
- Low magnitude of exceedance of the TRV for ethylbenzene (HQ = 1.6)

LWG Risk Recommendations for Receptor Selection

- Because total TEQ risk is largely driven by PCB, and redundant with PCB risk (with the four exceptions noted above), and because adverse effects in mink are better correlated with PCB exposures than with TEQ exposures (Fuchsman et al. 2007), the FS analysis of alternatives should focus primarily, but not exclusively, on evaluating whether remedies protect the mink population from risk due to exposure to PCBs.
- It is recommended that the bird egg LOE not be used to develop and evaluate remedial

alternatives in the FS. Risk to osprey and bald eagle based on the egg LOE cannot be directly compared with dietary risks.

- The bioaccumulation relationship from prey to egg is not well-characterized, rendering predictions based on this relationship highly uncertain.
- Because mink is the receptor most sensitive to PCBs and dioxins/furans, it is recommended that from an ecological risk management perspective, FS analyses should focus primarily on the mink dietary risk reduction associated with the remedial alternatives.

LWG Risk Recommendations for TZW

- TZW sampling focused on sites with groundwater pathways that were a potential concern. Where these groundwater pathways are confirmed to be a concern, they will be addressed through source control. Source controls should be in place prior to implementation of sediment remedies, particularly those associated with upland sources (EPA 2002, 2005) in order to prevent recontamination. These source control actions will reduce contaminant flux to the river and accelerate recovery. Source controls will reduce baseline risk by intercepting ongoing contaminant migration. While the residual contaminated groundwater plumes may remain near the mudline, they will attenuate over time. Because source controls should precede the sediment remedy, the magnitude of potential risk identified in the BERA should be diminished when the sediment remedy is implemented.
- It is recommended that only those TZW COPCs with $HQ \geq 100$ be considered as COCs to develop and evaluate remedial alternatives that are protective of ecological resources. This recommendation is based on two factors. First, by definition any contaminant with $HQ \geq 1$ poses potentially unacceptable risk, but the evidence presented in Section 6.6.3.3 of the BERA (Windward 2011) strongly supports the position that the potential for unacceptable risk at $HQs < 10$ is very small. Therefore, a factor of 10 was applied to account for the evidence that benthic receptors are not directly exposed to undiluted TZW. Second, EPA guidance (EPA 2005) states that remedies should be evaluated under the assumption that sources of COPCs to the groundwater plume have been controlled. The effect of source control should be to reduce the potential flux of groundwater COPCs into the shallow transition zone prior to sediment remediation. An additional factor of 10 was applied to account for the control of COPC sources.
- Almost all metals measured in TZW are common crustal elements. Barium, iron, and manganese are among the most common metals associated with sediments. These same metals are also associated with the highest HQs in the risk characterization, but there is substantial uncertainty that their source is ubiquitously anthropogenic. It is recommended that TZW concentrations of these metals not be used to assess remedy effectiveness.
- Potential remedies should be evaluated in the FS for the degree to which they protect benthic invertebrate communities and individual Pacific lamprey ammocoetes from risk due to contaminated groundwater discharge, assuming that groundwater source control measures have been implemented.

LWG Risk Recommendations for BMI

- Recommended benthic AOCs, based on the LWG's application of the comprehensive benthic

approach upon completion of the draft final BERA, are shown on Maps 1a and 1b of the risk management recommendations document.

- Bioassays cannot form the primary LOE for the FS analysis of alternatives, because the analysis is of potential future conditions. Therefore, the sediment chemistry LOE, as applied in the comprehensive benthic approach, will have to be used to judge protectiveness of potential remedies. The comprehensive benthic approach uses concordance between an MQ based on the site-specific SQVs and the predicted pMax to identify benthic risk areas. EPA selected the MQ threshold of 0.7 and the pMax threshold of 0.59 that the LWG used in defining benthic AOCs. These same thresholds should be used to evaluate the protectiveness of potential remedies. The analysis of alternatives should also consider whether and how much natural recovery would occur prior to implementing active remedies. Per EPA guidance (EPA 2002, 2005), the analysis should presume that source control measures will be in place.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

To: "Allen, Michael" [AllenMC@cdm.com]
Cc: []
Bcc: []
From: CN=Richard Muza/OU=R10/O=USEPA/C=US
Sent: Mon 4/30/2012 7:28:41 PM
Subject: Fw: Swan Island Upland Facility - OU4 RA-FS-SCE and OU4 Soil Management Plan
[SIUF OU4 RA-FS-SCE \(no appendices\).pdf](#)
[SIUF OU4 SMP.pdf](#)
[Hotspot](#)
[Description:](#)
C:\Users\mpickering\AppData\Roaming\Microsoft\Signatures\ApexCos_Files\ApexCos_AutoSignature_Mini.jpg
[here](#)
(embedded image)

Mike

Attached please find two more reports on the "Swan Island" uplands facility at Portland Harbor. I believe that we all agreed that this is a focus area for EPA oversight of DEQ work. Feel free for CDM to review as appropriate.

THANKS!

Rich

Rich Muza
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Portland, Oregon 97205
503-326-6554

----- Forwarded by Richard Muza/R10/USEPA/US on 04/30/2012 12:26 PM -----

From: Michael Pickering <MPickering@AshCreekAssociates.com>
To: "lacey.david@deq.state.or.us" <lacey.david@deq.state.or.us>
Cc: Dwight Leisle <Dwight.Leisle@portofportland.com>, Kristine Koch/R10/USEPA/US@EPA, Jessica Hamilton <Jessica.Hamilton@portofportland.com>, "Barthelmess, Suzanne" <Suzanne.Barthelmess@portofportland.com>, "Vincent, Richard" <Richard.Vincent@portofportland.com>, "Lewis, Mark" <mlewis@formationenv.com>, Richard Muza/R10/USEPA/US@EPA, Penina Ongiro <Penina.Ongiro@portofportland.com>
Date: 04/27/2012 02:55 PM
Subject: Swan Island Upland Facility - OU4 RA-FS-SCE and OU4 Soil Management Plan

Dave,

Attached please find the OU4 Risk Assessment, Feasibility Study, and Source Control Evaluation document (RA-FS-SCE) and the OU4 Soil Management Plan for the Swan Island Upland Facility. Hard copies will follow by mail to DEQ and EPA. Please note that due to file size constraints, the reports will be on a CD included with each hard copy. If you have any questions, please contact Dwight Leisle at Personal Privacy / Ex. 6

Thanks!

*Michael

.....

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